

[4910-13-U]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39 [66 FR 17499 4/2/2001]

[Docket No. 98-NM-326-AD; Amendment 39-12163; AD 2001-06-16]

RIN 2120-AA64

Airworthiness Directives; McDonnell Douglas Model DC-9-80 Series Airplanes and Model MD-88 Airplanes

AGENCY: Federal Aviation Administration, DOT.

ACTION: Final rule.

SUMMARY: This amendment supersedes an existing airworthiness directive (AD), applicable to all McDonnell Douglas Model DC-9-80 series airplanes and Model MD-88 airplanes, that currently requires revisions to the Airplane Flight Manual (AFM) and installation of inspection aids on the wing upper surfaces. This amendment requires, among other actions, installation of an overwing heater blanket system or primary upper wing ice detection system, and installation of a heater protection panel or an equipment protection device on certain overwing heater blanket systems. This amendment is prompted by incidents in which ice accumulation on the wing upper surfaces shed into the engines during takeoff. The actions specified by this AD are intended to prevent ice accumulation on the wing upper surfaces, which could result in ingestion of ice into one or both engines and consequent loss of thrust from one or both engines.

DATES: Effective May 7, 2001.

The incorporation by reference of McDonnell Douglas Service Bulletin 30-59, dated September 18, 1989, and McDonnell Douglas Service Bulletin 30-59, Revision 1, dated January 5, 1990, as listed in the regulations, was approved previously by the Director of the Federal Register as of January 17, 1992 (57 FR 2014, November 12, 1998).

The incorporation by reference of certain other publications, as listed in the regulations, is approved by the Director of the Federal Register as of May 7, 2001.

ADDRESSES: The service information referenced in this AD may be obtained from Boeing Commercial Aircraft Group, Long Beach Division, 3855 Lakewood Boulevard, Long Beach, California 90846, Attention: Technical Publications Business Administration, Dept. C1-L51 (2-60). This information may be examined at the Federal Aviation Administration (FAA), Transport Airplane Directorate, Rules Docket, 1601 Lind Avenue, SW., Renton, Washington; or at the FAA, Los Angeles Aircraft Certification Office, 3960 Paramount Boulevard, Lakewood, California; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

FOR FURTHER INFORMATION CONTACT: Albert Lam, Aerospace Engineer, Systems and Equipment Branch, ANM-130L, FAA, Los Angeles Aircraft Certification Office, 3960 Paramount Boulevard, Lakewood, California 90712-4137; telephone (562) 627-5346; fax (562) 627-5210.

SUPPLEMENTARY INFORMATION: A proposal to amend part 39 of the Federal Aviation Regulations (14 CFR part 39) by superseding AD 92-03-02, amendment 39-8156 (57 FR 2014, January 17, 1992), which is applicable to all McDonnell Douglas Model DC-9-80 series airplanes and Model MD-88 airplanes, was published as a supplemental notice of proposed rulemaking (NPRM) in the **Federal Register** on April 28, 2000 (65 FR 24882). The action proposed to continue to require a revision to the Airplane Flight Manual (AFM) to specify restrictions on operations during

icing conditions, installation of inspection aids on the inboard side of the wing upper surfaces, and a revision to the AFM to specify restrictions on operations when such inspection aids are missing. That action also proposed to add a requirement for installation of an overwing heater blanket system or a primary upper wing ice detection system, and a new revision to the AFM to advise the flight crew of the hazards associated with ice accumulation on wing surfaces.

Comments Received

Interested persons have been afforded an opportunity to participate in the making of this amendment. Due consideration has been given to the comments received.

Support for Supplemental NPRM

Several commenters support the supplemental NPRM.

Request to Allow a Certain Installation After the Effective Date of the AD

One commenter requests that installation of an operational overwing heater blanket system per TDG Aerospace, Inc., Supplemental Type Certificate (STC) SA6042NM without an equipment protective device (EPD) be allowed after the effective date of this AD until an EPD becomes available, provided that the inspection and test requirements of paragraph (d)(2) of the supplemental NPRM are done. As currently worded, paragraph (d) of the supplemental NPRM requires inspection and test requirements for airplanes on which an overwing heater blanket system was installed without a heater protection panel (HPP) or an EPD prior to the effective date of this AD. The commenter states that it interprets this paragraph to mean that any overwing heater blanket system installed after the effective date of the AD must include an HPP or EPD as part of the installation. The commenter notes that there are no EPD's available to date.

The FAA does not agree and finds that clarification is necessary. The commenter is correct that this AD (paragraph (f)) requires installation of an overwing heater blanket system with an HPP or EPD. Since issuance of the supplemental NPRM, we have reviewed and approved the design of an EPD (reference TDG Master Drawing List (MDL) E93-104, Revision R, dated October 25, 2000), which provides a circuit protection function to the overwing heater blanket, for installation on certain affected airplanes. We have revised paragraph (f)(2)(i) of the final rule to reference this MDL as an acceptable method of compliance. We find that the 3-year compliance time specified in paragraph (f) of this AD for installation of an EPD will accommodate the time necessary for affected operators to order, obtain, and install an EPD in conjunction with an overwing heater blanket system, without adversely affecting safety.

Request to Revise Repetitive Test Intervals

One commenter requests that the repetitive test interval specified in paragraph (d)(2)(ii)(A) of the supplemental NPRM be extended from 150 days to 180 days. The commenter states that it currently does the tests during base maintenance visits every 1,300 flight hours. The commenters notes that, based on its average airplane utilization rate, 1,300 flight hours can be as much as 180 days.

The FAA does not agree. In developing an appropriate compliance time, the FAA considered the safety implications of potential arcing of an overwing heater blanket, and normal maintenance schedules for timely accomplishment of the tests. In light of these items, we have determined that 150 days for compliance is appropriate. However, paragraph (i)(1) of the final rule does provide affected operators the opportunity to apply for an adjustment of the compliance time if data are presented to justify such an adjustment.

Request to Allow Deactivation of the Heater Blanket System

One commenter requests that a statement be added to paragraph (e) of the supplemental NPRM to allow the heater blanket system to be deactivated per the Master Minimum Equipment List (MMEL) until the repair or replacement can be done.

The FAA agrees. As discussed below under the heading "Request to Allow An Inoperative Overwing Heater Blanket System," we find that an overwing heater blanket or ice detection system may be inoperative for 10 days per the MMEL, so that the affected airplane may be rerouted to a suitable repair station. We have included a new paragraph (h) in the final rule that provides for such

an option. We have also revised paragraph (e) of the final rule to reference that option in paragraph (h) of the final rule.

Requests to Revise 3-Year Compliance Time

Several commenters request that the 3-year compliance time specified in paragraph (f) of the supplemental NPRM be revised. Some of the commenters suggest 2 years, and another suggests 18 months. One commenter suggests that the FAA determine and define a compliance time that is consistent with the flight safety risk implications, parts availability, and ability of operators to incorporate the modification.

Three commenters, one acting as a consultant to the others, state that a shorter compliance time would enhance public safety and reduce exposure to current manual tactile inspection procedures as the primary means of determining whether wings are free of ice. The commenters also state that an 18-month or 24-month compliance time should not cost operators any more to comply with than a 3-year compliance time. The commenters further state that one of the heater blanket manufacturers can provide sufficient quantities of heater blanket kits within an 18-month or 24-month compliance time. One of the commenters states that a 3-year compliance time seems unduly long given the potential severity of the problem and that the solution is already well established.

The FAA does not agree. As discussed under the heading “Explanation of Differences Between Service Bulletins and Supplemental NPRM” in the preamble of the supplemental NPRM, we find installation of both an overwing heater blanket system and HPP or EPD within 3 years after the effective date of this AD to be appropriate. In developing an appropriate compliance time, the FAA considered the interim requirements (i.e., repetitive inspections of the overwing heater blanket); development, approval, and manufacturing schedule of EPD’s; scope of an EPD installation; and safety impact of the existing TDG overwing heater blanket without an EPD. Because the installation of an EPD or HPP is relatively simple and may be done during a light maintenance check, we find that a 3-year compliance time for fielding an EPD to affected operators will not impose an unreasonable burden on operators. Also, we find that an overwing heater blanket system should be installed during a heavy maintenance check (i.e., 3 years). An 18-month compliance time would require operators to schedule special times for installation of an overwing heater blanket system or primary upper wing ice detection system, at additional expense and downtime.

Operators are always permitted to accomplish the requirements of an AD at a time earlier than that specified as the compliance time; therefore, if an operator elects to accomplish the installation required by paragraph (f) of this AD before 3 years after the effective date of this AD, it is that operator’s prerogative to do so. If additional data are presented that would justify a shorter compliance time, the FAA may consider further rulemaking on this issue. Therefore, no change to the compliance time of paragraph (f) of the final rule is necessary.

One commenter requests that the 3-year compliance time specified in paragraph (f) of the supplemental NPRM begin from the date when an approved EPD becomes available. The commenter states that, to date, there are no EPD’s available. The FAA does not agree. As discussed above under the heading “Request to Allow a Certain Installation After the Effective Date of the AD,” we have approved the design for an EPD and find that the 3-year compliance time for installation of an EPD will accommodate the time necessary for affected operators to order, obtain, and install an EPD in conjunction with an overwing heater blanket system, without adversely affecting safety.

Request to Only Require Installation of an Overwing Heater Blanket System

One commenter requests that paragraph (f) of the proposed AD only require installation of an overwing heater blanket. The commenter states that installation of a primary upper wing ice detection system (the proposed alternative to installation of an overwing heater blanket) may detect the occurrence of ice, but will not remove ice. The commenter provides the following safety/operational issues concerning ice detectors:

1. Ice can form on the “cold corner” of Model DC-9-80 series airplanes at an outside air temperature as high as 50° Fahrenheit (10° Celsius). Under these non-winter conditions, de-icing equipment may not be available.

2. Most types of ice detectors are “point detectors,” so ice may form undetected away from the sensor head.

The commenter concludes that installation of an overwing heater blanket provides both the required level of safety and airline operational benefit (no de-icing from “cold corner” ice).

Another commenter states that it is concerned about the availability of technology related to primary upper wing ice detection systems, which may not be adequate to provide a reliable ice detection system. However, in contradiction to this statement, the commenter also states the remote system ice detection technology may prove to be more adequate; however, current airport environments may preclude their use.

The FAA does not agree with the commenter’s request to only require installation of an overwing heater blanket system. The requirements of this AD are intended to prevent “ice accumulation on the wing upper surfaces, which could result in ingestion of ice into one or both engines and consequent loss of thrust from one or both engines.” We have determined that installation of an FAA-approved primary upper wing ice detection system will detect ice on the “cold corner” of Model DC-9-80 series airplanes and is a reliable ice detection system. In addition, all Model MD-90-30 and 717 series airplanes are equipped with primary upper wing ice detection systems. We have not received any report of failures or malfunctions of the primary upper wing ice detection systems that resulted in an unsafe condition on those airplanes. Furthermore, airplane-mounted ice detection systems have been fully developed and are being widely used on different areas and on different types of airplane models. We find that both the overwing heater blanket and primary upper wing ice detection systems perform their intended functions and provide an acceptable level of safety. As a result, the AD allows operators the flexibility to choose an appropriate system that suits their operational requirements.

Request to Revise Applicability of Certain Paragraphs

One commenter requests clarification of the applicability of paragraph (f)(1)(iii) of the supplemental NPRM. The commenter states that the wording is vague and should clearly state that airplanes identified, but not modified, per paragraph (f)(1)(i) or (f)(1)(ii) of the supplemental NPRM must do the requirements of paragraph (f)(1)(iii)(B) or (f)(1)(iii)(C) of the supplemental NPRM. The commenter states that its airplanes are identified in the effectivity of McDonnell Douglas Service Bulletin MD80-30-090, but opted to install the AlliedSignal system.

The FAA agrees that clarification is necessary. Paragraph (f) of the supplemental NPRM states “accomplish the requirements of either paragraph (f)(1) or (f)(2) of this AD.” Our intent was that operators could do any of the actions specified in those paragraphs (including the sub-paragraphs), regardless of whether an airplane was identified in paragraph (f)(1)(i) or (f)(1)(ii) of the supplemental NPRM (Group 1 and Group 2 airplanes listed in McDonnell Douglas Service Bulletin MD80-30-090, dated October 19, 1999). For airplanes not identified in paragraph (f)(1)(i) or (f)(1)(ii) of the supplemental NPRM, it was also our intent that operators be able to do the requirements of paragraph (f)(1)(i) or (f)(1)(ii) of this AD if approved per paragraph (i)(1) of this AD. Because some operators may misinterpret paragraph (f) of the supplemental NPRM as it is currently worded, we have revised paragraph (f) of the final rule to clarify these points by deleting paragraph (f)(1)(iii) of the supplemental NPRM, adding a new note, and redesignating other sub-paragraphs of paragraph (f) of the supplemental NPRM.

Request to Revise AFM

One commenter requests that the AFM be revised to include additional foreign object damage (FOD) information for the flight crew. The commenter suggests the following:

1. Airplanes operated with an overwing heater blanket system can still encounter possible FOD danger in certain weather conditions, and in this case, a hands-on inspection to detect ice in the flap and spoiler areas must be performed. The heaters should remain OFF until completion of that inspection and de-icing.

2. In the case of an inoperative overwing heater blanket system, a hands-on inspection, as required by AD 92-03-02, must be performed until the system is repaired.

The commenter notes that there were incidents of FOD to an engine on airplanes equipped with an overwing heater blanket system, which apparently originated from ice being ingested into the engine during takeoff. Investigation revealed that, if an overwing heater blanket system is left ON for several hours when an airplane is on the ground during a snow or ice storm, frozen precipitation over the heated area of the wing melts and runs off into the flap trailing edge or spoiler cavity areas. De-icing crews cleared the remainder of the airframe, but failed to detect the ice remaining in the flap or spoiler areas. If the airplane is dispatched in that condition, the ice may be ingested into the engine during takeoff.

The FAA does not agree. Overwing heater blanket systems are only designed and certified as anti-icing systems and should not be used as a de-icing device. We have determined that the runoff flows into the flap or spoiler cavity areas are no different for airplanes equipped with or without an overwing heater blanket system. Therefore, ice could form on any airplane area where runoff flows are not cleared by a de-icing crew. As discussed previously, the requirements of this AD are intended to prevent ice accumulation on the wing upper surfaces, which does not relieve operators and flight crews from complying with 14 CFR parts 91.527 and 121.629 requirements to properly operate an airplane in icing conditions. Subsequent to the incidents cited by the commenter, Boeing issued All Operators Letter, FO-AOL-9-061, dated September 25, 1996, which informs operators and flightcrews of proper de-icing and inspection procedures.

Request to Revise Description of Tufts and Triangular Decals

One commenter requests that the FAA revise the term “tufts and triangular decals” throughout the supplemental NPRM to “inspection aids.” The commenter states that this revision would provide one term to describe the various inspection aids (i.e., tufts, decals, mount pads, painted symbols, and paint stripes.) The FAA agrees and has revised the final rule accordingly.

Request to Continue to Require Inspection Aids After Certain Actions

One commenter requests that inspection aids required by paragraph (c) of the supplemental NPRM remain required after installation of either an overwing heater blanket system or primary upper wing ice detector system, and incorporation of the AFM revision required by paragraphs (f) and (g) of the supplemental NPRM, respectively. The commenter states that this is required for MMEL relief. The commenter also states that the inspection aids are part of the MD-90 production configuration, even though the wing clear ice issue was eliminated by a return-to-tank heating system. The commenter further states that a certain operator incorporated the grid strips inspection aids, along with the heater blanket installation, on its fleet.

The FAA partially agrees. We do not agree that the inspection aids required by paragraph (c) of the AD are necessary after installation of either an overwing heater or primary upper ice detector system, and incorporation of the AFM revision, required by paragraphs (f) and (g) of the AD, respectively. However, as discussed below under the heading “Request to Allow An Inoperative Overwing Heater Blanket System,” we do agree that an airplane may be operated with an inoperative overwing heater blanket or primary upper ice detection system for 10 days per the MMEL, provided that the actions specified in paragraphs (h)(1), (h)(2), and (h)(3) of this final rule are done before further flight. As indicated below, we have included a new paragraph (h) to provide this exception. Therefore, no change to paragraph (c) is necessary.

Request to Allow An Inoperative Overwing Heater Blanket System

One commenter requests that dispatch with an inoperative overwing heater blanket system per the MMEL be permitted in paragraph (g) of the supplemental NPRM. The commenter notes the AFM revision required by paragraph (g) of the supplemental NPRM is the same as that required by AD 92-03-02 (paragraph (a) of the supplemental NPRM), except the requirement for the visual and physical checks of the wing upper surfaces for ice has been removed. The commenter also notes that requirements of paragraph (g) of the supplemental NPRM allow for the removal of the AFM revisions required by paragraphs (a) and (b) of the supplemental NPRM, as well as the tuft and triangular decal installation required by paragraph (c) of the supplemental NPRM (all of which were requirements of AD 92-03-02 that were retained in the supplemental NPRM).

The commenter states that its affected airplanes are equipped with an overwing heater blanket system and operated per the AFM Supplement for TDG Aerospace, Inc., STC SA6042NM. This STC, which was approved as an alternative method of compliance (AMOC) for AD 92-03-02, allows an overwing heater blanket system to be inoperative per the MMEL for 120 days, provided that the visual and physical checks of the wing upper surfaces for ice are performed as indicated in the AFM revision required by paragraph (a) of the supplemental NPRM. As paragraph (g) of the supplemental NPRM is currently worded, the commenter states that it will no longer be able to operate with an inoperative overwing heater blanket system per the MMEL, and that the overwing heater blanket system must be operational for every flight.

The FAA partially agrees with the commenter's request. The FAA acknowledges that it issued AMOC's for AD 92-03-02 (i.e., Boeing TDG overwing heater blankets without an HPP installed, and TDG Aerospace, Inc., STC SA6042NM without an EPD installed) that reverted to the physical and visual checks to detect ice required by that AD in the event that the overwing heater blanket became inoperative. As discussed in the preamble of the NPRM, we found that the physical and visual checks to detect ice accumulation, as specified by the AFM revision required by AD 92-03-02, may not be adequate to ensure the safety of the affected transport airplane fleet.

However, we find that, for 10 days (not the 120 days currently specified in the MMEL), an overwing heater blanket or primary upper wing ice detection system may be inoperative per the MMEL, provided that the physical and visual checks to detect ice are performed. This would allow the affected airplanes with an inoperative overwing heater blanket system to be rerouted to a suitable repair station and would still maintain an adequate level of safety. It should be noted that the 10-day MMEL relief does not relieve operators and flight crews from complying with the requirements of 14 CFR parts 91.527 and 121.69 for properly operating an airplane in icing conditions.

Therefore, the FAA has added a new paragraph (h) to include instructions for operating an airplane with an overwing heater blanket system that is inoperative and revised paragraph (g) to reference that paragraph as an exception.

Request to Include Previously Approved AMOC's

One commenter notes that paragraph (h)(2) of the supplemental NPRM states that "Alternative methods of compliance, approved previously in accordance with AD 92-03-02, amendment 39-8156, are NOT approved as alternative methods of compliance with this AD." The commenter states that it has received AMOC's for the requirements of paragraphs (b) and (c) of the supplemental NPRM and provides an explanation of those AMOC's. Therefore, the commenter requests that the requirements of paragraphs (b) and (c) of the supplemental NPRM be revised to address those AMOC's.

The FAA partially agrees. We acknowledge that we approved an AMOC, which installed a non-skid, striped triangular symbol per Option 5 of McDonnell Douglas Service Bulletin MD80-30-059, Revision 4 through Revision 7, for the requirements of paragraph (b) of AD 92-03-02. We also acknowledge that we approved an AMOC, which revises the Configuration Deviation List (CDL) Appendix of the AFM by inserting a copy of CDL Appendix, Section I, Page 2A, dated March 10, 1993, into the AFM, for the requirements of paragraph (c) of AD 92-03-02.

We find that these AMOC's are still acceptable for compliance with the requirements of paragraphs (b) and (c) of this AD, respectively. We have revised paragraph (i)(2) of the final rule accordingly. However, for the reasons identified in the preamble of the supplemental NPRM, AMOC's approved previously per AD 92-03-02 for Boeing TDG overwing heater blankets without an HPP installed, or TDG Aerospace, Inc. STC SA6042NM without an EPD installed are NOT approved as AMOC's with this AD.

Explanation of Change to Certain STC References

The FAA has revised paragraphs (f)(2)(i) and (f)(2)(ii) of the final rule to: (1) remove the reference to TDG Aerospace, Inc., STC SA6042NM and AlliedSignal STC SA6061NM and, instead, include a reference to a method approved by the FAA; and (2) add new notes to reference those STC's as approved means of compliance with the requirements of paragraphs (f)(2)(i) and (f)(2)(ii) of this AD, respectively. We find these STC's should not be incorporated by reference in the final rule, because they contain proprietary information.

Conclusion

After careful review of the available data, including the comments noted above, the FAA has determined that air safety and the public interest require the adoption of the rule with the changes previously described. The FAA has determined that these changes will neither increase the economic burden on any operator nor increase the scope of the AD.

Cost Impact

There are approximately 1,153 Model DC-9-80 series airplanes and Model MD-88 airplanes of the affected design in the worldwide fleet. The FAA estimates that 643 airplanes of U.S. registry will be affected by this AD.

The AFM revision that is currently required by AD 92-03-02 takes approximately 1 work hour per airplane to accomplish, at an average labor rate of \$60 per work hour. Based on these figures, the cost impact of the currently required AFM revision on U.S. operators is estimated to be \$38,580, or \$60 per airplane.

The revision of the CDL that is currently required by AD 92-03-02 takes approximately 1 work hour per airplane to accomplish, at an average labor rate of \$60 per work hour. Based on these figures, the cost impact of the CDL revision on U.S. operators is estimated to be \$38,580, or \$60 per airplane.

The installation of tufts and decals that is currently required by AD 92-03-02 takes approximately 3 work hours per airplane to accomplish, at an average labor rate of \$60 per work hour. Required parts cost approximately \$25 per airplane. Based on these figures, the cost impact of the currently required installation of tufts and decals on U.S. operators is estimated to be \$131,815, or \$205 per airplane.

The installation of the wing heater system that is provided as one option for compliance with this AD action will take approximately 200 to 350 work hours per airplane to accomplish, at an average labor rate of \$60 per work hour. Required parts will cost approximately \$76,000 to \$130,000 per airplane, depending on suppliers, airplane fleet size, and configuration. Based on these figures, the cost impact of the installation required by this AD on U.S. operators is estimated to range from \$88,000 to \$151,000 per airplane.

In lieu of installation of a wing heater system, this AD provides for installation of a primary upper wing ice detector system. Because the manufacturer has not issued service information that describes the procedures for such an installation, the FAA is unable at this time to provide specific information as to the number of work hours or cost of parts that will be required to do that installation. However, based on estimated costs provided by the manufacturer, we can reasonably estimate that the required installation will require 290 work hours to do, at an average labor rate of \$60 per work hour. The cost of required parts is estimated to range from \$30,000 to \$70,000 per airplane, depending on fleet size and airplane configuration. Based on these figures, the cost impact of the installation of a primary upper wing ice detector system required by this AD on U.S. operators is estimated to range from \$47,400 to \$87,400 per airplane.

The new AFM revision that is required in this AD action will take approximately 1 work hour per airplane to accomplish, at an average labor rate of \$60 per work hour. Based on these figures, the cost impact of the new AFM revision required by this AD on U.S. operators is estimated to be \$38,580, or \$60 per airplane.

For affected airplanes, the new repetitive tests required in this AD action will take approximately 3 work hours per airplane to accomplish, at an average labor rate of \$60 per work hour. Based on these figures, the cost impact of the repetitive tests required by this AD on U.S. operators is estimated to be \$180 per airplane, per test cycle.

For affected airplanes, the one-time detailed visual inspection required in this AD action will take approximately 3 work hours per airplane to accomplish, at an average labor rate of \$60 per work hour. Based on these figures, the cost impact of the detailed visual inspection required by this AD on U.S. operators is estimated to be \$180 per airplane.

For airplanes listed in Group 1 of McDonnell Douglas Alert Service Bulletin MD80-30-090, the modification of the existing HPP will take approximately 5 work hours per airplane to accomplish, at

an average labor rate of \$60 per work hour. The manufacturer has committed previously to its customers that it will bear the cost of necessary parts. As a result, the cost of those parts is not attributable to this AD. Based on these figures, the cost impact of the AD on U.S. operators is estimated to be \$300 per airplane.

For airplanes listed in Group 2 of McDonnell Douglas Alert Service Bulletin MD80-30-090, the installation of the HPP and associated wiring will take approximately 3 work hours per airplane to accomplish, at an average labor rate of \$60 per work hour. The manufacturer has committed previously to its customers that it will bear the cost of necessary parts. As a result, the cost of those parts is not attributable to this AD. Based on these figures, the cost impact of the AD on U.S. operators is estimated to be \$180 per airplane.

The installation of an EPD will take approximately 1 work per airplane to accomplish, at an average labor rate of \$60 per work hour. The required EPD will cost approximately \$5,475 per airplane. Based on these figures, the cost impact of this action required by this AD on U.S. operators is estimated to be \$5,535 per airplane.

The cost impact figures discussed above are based on assumptions that no operator has yet accomplished any of the requirements of this AD action, and that no operator would accomplish those actions in the future if this AD were not adopted. The cost impact figures discussed in AD rulemaking actions represent only the time necessary to perform the specific actions actually required by the AD. These figures typically do not include incidental costs, such as the time required to gain access and close up, planning time, or time necessitated by other administrative actions.

Regulatory Impact

The regulations adopted herein will not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government. Therefore, it is determined that this final rule does not have federalism implications under Executive Order 13132.

For the reasons discussed above, I certify that this action (1) is not a “significant regulatory action” under Executive Order 12866; (2) is not a “significant rule” under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and (3) will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act. A final evaluation has been prepared for this action and it is contained in the Rules Docket. A copy of it may be obtained from the Rules Docket at the location provided under the caption “ADDRESSES.”

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

Adoption of the Amendment

Accordingly, pursuant to the authority delegated to me by the Administrator, the Federal Aviation Administration amends part 39 of the Federal Aviation Regulations (14 CFR part 39) as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. Section 39.13 is amended by removing amendment 39-8156 (57 FR 2014, January 17, 1992), and by adding a new airworthiness directive (AD), amendment 39- , to read as follows:

AIRWORTHINESS DIRECTIVE



Aircraft Certification Service
Washington, DC

U.S. Department
of Transportation
**Federal Aviation
Administration**

We post ADs on the internet at "av-info.faa.gov"

The following Airworthiness Directive issued by the Federal Aviation Administration in accordance with the provisions of Title 14 of the Code of Federal Regulations (14 CFR) part 39, applies to an aircraft model of which our records indicate you may be the registered owner. Airworthiness Directives affect aviation safety and are regulations which require immediate attention. You are cautioned that no person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of the Airworthiness Directive (reference 14 CFR part 39, subpart 39.3).

2001-06-16 MCDONNELL DOUGLAS: Amendment 39-12163. Docket 98-NM-326-AD.
Supersedes AD 92-03-02, Amendment 39-8156.

Applicability: All Model DC-9-81, -82, -83, and -87 series airplanes; and Model MD-88 airplanes; certificated in any category.

Note 1: This AD applies to each airplane identified in the preceding applicability provision, regardless of whether it has been modified, altered, or repaired in the area subject to the requirements of this AD. For airplanes that have been modified, altered, or repaired so that the performance of the requirements of this AD is affected, the owner/operator must request approval for an alternative method of compliance in accordance with paragraph (i)(1) of this AD. The request should include an assessment of the effect of the modification, alteration, or repair on the unsafe condition addressed by this AD; and, if the unsafe condition has not been eliminated, the request should include specific proposed actions to address it.

Compliance: Required as indicated, unless accomplished previously.

To prevent ice accumulation on the wing upper surfaces, which could result in ingestion of ice into one or both engines and consequent loss of thrust from one or both engines, accomplish the following:

RESTATEMENT OF REQUIREMENTS OF AD 92-03-02: Airplane Flight Manual Revision

(a) Within 10 days after January 17, 1992 (the effective date of AD 92-03-02, amendment 39-8156), revise the Limitations Section of the FAA-approved Airplane Flight Manual (AFM) to include the following. This may be accomplished by inserting a copy of this AD in the AFM.

"Ice on Wing Upper Surfaces"

CAUTION

Ice shedding from the wing upper surface during takeoff can cause severe damage to one or both engines, leading to surge, vibration, and complete thrust loss. The formation of ice can occur on wing surfaces during exposure of the airplane to normal icing conditions. Clear ice can also occur on the wing upper surfaces when cold-soaked fuel is in the main wing fuel tanks, and the airplane is exposed to conditions of high humidity, rain, drizzle, or fog at ambient temperatures well above freezing. Often, the ice accumulation is clear and difficult to detect visually. The ice forms most frequently on the inboard, aft corner of the main wing tanks. [END OF CAUTIONARY NOTE]

The wing upper surfaces must be physically checked for ice when the airplane has been exposed to conditions conducive to ice formation. Takeoff may not be initiated unless the flight crew verifies that a visual check and a physical (hands-on) check of the wing upper surfaces have been

accomplished, and that the wing is clear of ice accumulation when any of the following conditions occur:

- (1) When the ambient temperature is less than 50 degrees F and high humidity or visible moisture (rain, drizzle, sleet, snow, fog, etc.) is present;
- (2) When frost or ice is present on the lower surface of either wing;
- (3) After completion of de-icing.

When inspection aids (i.e. tufts, decals, mount pads, painted symbols, and paint stripes) are installed in accordance with McDonnell Douglas MD-80 Service Bulletin 30-59, the physical check may be made by assuring that all installed tufts move freely.

NOTE

This limitation does not relieve the requirement that aircraft surfaces are free of frost, snow, and ice accumulation, as required by Federal Aviation Regulations Sections 91.527 and 121.629. [END OF NOTE]"

AFM Configuration Deviation List Revision

(b) Within 10 days after January 17, 1992, revise the Configuration Deviation List (CDL) Appendix of the FAA-approved AFM to include the following. This may be accomplished by inserting a copy of this AD in the AFM.

"30-80-01 Triangular Decal and Tuft Assemblies

Up to two (2) decals or tufts per side may be missing, provided:

- a) At least one decal and tuft on each side is located along the aft spar line; and
- b) The tufts are used for performing the physical check to determine that the upper wing is free of ice by observing that the tufts move freely.

Up to eight (8) decals and/or tufts may be missing, provided:

- a) Takeoff may not be initiated unless the flight crew verifies that a physical (hands-on) check is made of the upper wing in the location of the missing decals and/or tufts to assure that there is no ice on the wing when icing conditions exist;

OR

- b) When the ambient temperature is more than 50 degrees F."

Installation of Inspection Aids

(c) Within 30 days after January 17, 1992, install inspection aids (i.e., tufts, decals, mount pads, painted symbols, and paint stripes) on the inboard side of the wings' upper surfaces, in accordance with McDonnell Douglas Service Bulletin 30-59, dated September 18, 1989; Revision 1, dated January 5, 1990; or Revision 2, dated August 15, 1990.

NEW REQUIREMENTS OF THIS AD:

Repetitive Tests and One-Time Inspection

(d) For airplanes on which an overwing heater blanket system was installed without installation of a heater protection panel (HPP) or an equipment protection device (EPD) prior to the effective date of this AD: Within 60 days after the effective date of this AD, accomplish the actions specified in paragraph (d)(1) or (d)(2) of this AD, as applicable.

(1) For airplanes on which the overwing heater blanket system was installed in accordance with McDonnell Douglas Service Bulletin MD80-30-071, Revision 02, dated February 6, 1996; or McDonnell Douglas Service Bulletin MD80-30-078, Revision 01, dated April 8, 1997: Accomplish paragraphs (d)(1)(i) and (d)(1)(ii) of this AD.

(i) Remove secondary access covers, and perform a one-time detailed visual inspection to detect discrepancies (mechanical damage or punctures in the upper skin of the blanket, prying damage on the panel, and fuel leakage) of the overwing heater blanket, in accordance with McDonnell Douglas Alert Service Bulletin MD80-30A087, dated September 22, 1997. And,

(ii) Accomplish paragraph (d)(1)(ii)(A) or (d)(1)(ii)(B) of this AD.

(A) Perform dielectric withstanding voltage and resistance tests in accordance with McDonnell Douglas Alert Service Bulletin MD80-30A087, dated September 22, 1997. Repeat the tests thereafter at intervals not to exceed 150 days, until installation of an HPP in accordance with paragraph (f)(1)(i) or (f)(1)(ii) of this AD, as applicable.

(B) Deactivate the overwing heater blanket system until accomplishment of dielectric withstanding voltage and resistance tests specified in paragraph (d)(1)(ii)(A). If the overwing heater blanket system is deactivated as provided by this paragraph, continue to accomplish the requirements of paragraphs (a), (b), and (c) of this AD.

Note 2: For the purposes of this AD, a detailed visual inspection is defined as: "An intensive visual examination of a specific structural area, system, installation, or assembly to detect damage, failure, or irregularity. Available lighting is normally supplemented with a direct source of good lighting at intensity deemed appropriate by the inspector. Inspection aids such as mirror, magnifying lenses, etc., may be used. Surface cleaning and elaborate access procedures may be required."

(2) For airplanes on which the overwing heater blanket system was installed in accordance with TDG Aerospace, Inc., STC SA6042NM: Accomplish paragraphs (d)(2)(i) and (d)(2)(ii) of this AD.

(i) Remove secondary access covers, and perform a one-time detailed visual inspection to detect discrepancies (mechanical damage or punctures in the upper skin of the blanket, prying damage on the panel, and fuel leakage) of the overwing heater blanket, in accordance with McDonnell Douglas Alert Service Bulletin MD80-30A087, dated September 22, 1997. And,

(ii) Accomplish paragraph (d)(2)(ii)(A) or (d)(2)(ii)(B) of this AD.

(A) Perform dielectric withstanding voltage and resistance tests in accordance with McDonnell Douglas Alert Service Bulletin MD80-30A087, dated September 22, 1997. Repeat the tests thereafter at intervals not to exceed 150 days, until installation of an EPD in accordance with paragraph (f)(1)(iii)(B) of this AD.

(B) Deactivate overwing heater blanket system until accomplishment of dielectric withstanding voltage and resistance tests specified in paragraph (d)(2)(ii)(A). If the overwing heater blanket system is deactivated as provided by this paragraph, continue to accomplish the requirements of paragraphs (a), (b), and (c) of this AD.

Corrective Action

(e) If any discrepancy is detected during any inspection or test performed in accordance with paragraph (d) of this AD, prior to further flight, repair or replace the affected heater blanket, in accordance with McDonnell Douglas Alert Service Bulletin MD80-30A087, dated September 22, 1997; except as provided in paragraph (h) of this AD.

Note 3: McDonnell Douglas Alert Service Bulletin MD80-30A087, dated September 22, 1997, references TDG Aerospace Document E95-451, Revision B, dated January 31, 1996, as an additional source of service information for accomplishment of repair or replacement of the overwing heater blanket.

Installation of Overwing Heater Blanket or Primary Upper Wing Ice Detection System

(f) Within 3 years after the effective date of this AD, do the requirements of either paragraph (f)(1) or (f)(2) of this AD.

(1) Do the actions specified in paragraph (f)(1)(i) or (f)(1)(ii) of this AD, as applicable.

(i) For airplanes listed in Group 1 in McDonnell Douglas Service Bulletin MD80-30-090, dated October 19, 1999: Install an overwing heater blanket system in accordance with McDonnell Douglas Service Bulletin MD80-30-071, Revision 02, dated February 6, 1996; and modify and reidentify the existing HPP in accordance with McDonnell Douglas Service Bulletin MD80-30-090. Modification of the existing HPP in accordance with this paragraph constitutes terminating action for the repetitive inspections required by (d)(1)(ii)(A) of this AD.

(ii) For airplanes listed in Group 2 in McDonnell Douglas Service Bulletin MD80-30-090, dated October 19, 1999: Install an overwing heater blanket system in accordance with McDonnell Douglas Service Bulletin MD80-30-078, Revision 01, dated April 8, 1997; and install an HPP and associated wiring in accordance with McDonnell Douglas Service Bulletin MD80-30-090. Installation of an HPP and associated wiring in accordance with this paragraph constitutes terminating action for the repetitive inspections required by (d)(1)(ii)(A) of this AD.

Note 4: For other airplanes, accomplishment of the requirements of paragraph (f)(1)(i) or (f)(1)(ii) of this AD may be acceptable per paragraph (i)(1) of this AD.

(2) Accomplish the actions specified in either paragraph (f)(2)(i), (f)(2)(ii), or (f)(2)(iii) of this AD.

(i) Install an overwing heater blanket system, and install an EPD that provides a circuit protection function to the overwing heater blanket, in accordance with a method approved by the Manager, Los Angeles Aircraft Certification Office (ACO), FAA. Installation of an EPD in accordance with this paragraph constitutes terminating action for the repetitive inspections required by (d)(2)(ii)(A) of this AD.

Note 5: Installation of an overwing heater blanket system and installation of an EPD that provides a circuit protection function to the overwing heater blanket, in accordance with TDG Aerospace, Inc., SA6042NM, or TDG Master Drawing List (MDL) E93-104, Revision R, dated October 25, 2000; is an approved means of compliance with the requirements of paragraph (f)(2)(i) of this AD

(ii) Install an overwing heater blanket system in accordance with a method approved by the Manager, Los Angeles ACO.

Note 6: Installation of an overwing heater blanket system in accordance with AlliedSignal STC SA6061NM, is an approved means of compliance with the requirements of paragraph (f)(2)(ii) of this AD.

(iii) Install an FAA-approved primary upper wing ice detection system in accordance with a method approved by the Manager, Los Angeles ACO.

Note 7: Boeing (McDonnell Douglas) has received FAA approval of an acceptable primary upper wing ice detection system. This modification has been assigned a Boeing (McDonnell Douglas) service bulletin number but, at this time, no service bulletin is available.

AFM Revision

(g) Except as provided by paragraph (h) of this AD, prior to further flight after accomplishment of the installation required by paragraph (f)(1) or (f)(2) of this AD, revise the Limitations Section of the FAA-approved AFM to include the following. This may be accomplished by inserting a copy of this AD in the AFM. After accomplishment of the installation required by paragraph (f)(1) or (f)(2) of this AD and this AFM revision, the AFM revisions required by paragraphs (a) and (b) of this AD may be removed from the AFM, and the inspection aids required by paragraph (c) of this AD may be removed from the airplane.

"Ice on Wing Upper Surfaces

CAUTION

Ice shedding from the wing upper surface during takeoff can cause severe damage to one or both engines, leading to surge, vibration, and complete thrust loss. The formation of ice can occur on wing surfaces during exposure of the airplane to normal icing conditions. Clear ice can also occur on the wing upper surfaces when cold-soaked fuel is in the main wing fuel tanks, and the airplane is exposed to conditions of high humidity, rain, drizzle, or fog at ambient temperatures well above freezing. Often, the ice accumulation is clear and difficult to detect visually. The ice forms most frequently on the inboard, aft corner of the main wing tanks. [END OF CAUTIONARY NOTE]"

(h) An airplane may be operated with an inoperative overwing heater blanket or primary upper wing ice detection system for 10 days per the Master Minimum Equipment List (MMEL), provided that the actions specified in paragraphs (h)(1), (h)(2), and (h)(3) of this AD are done before further flight.

(1) Revise the Limitations Section of the FAA-approved AFM to include the following. This may be accomplished by inserting a copy of this AD in the AFM.

"Ice on Wing Upper Surfaces

CAUTION

The wing upper surfaces must be physically checked for ice when the airplane has been exposed to conditions conducive to ice formation. Takeoff may not be initiated unless the flight crew verifies that a visual check and a physical (hands-on) check of the wing upper surfaces have been accomplished, and that the wing is clear of ice accumulation when any of the following conditions occur:

- (1) When the ambient temperature is less than 50 degrees F and high humidity or visible moisture (rain, drizzle, sleet, snow, fog, etc.) is present;
- (2) When frost or ice is present on the lower surface of either wing;
- (3) After completion of de-icing.

When inspection aids (i.e. tufts, decals, mount pads, painted symbols, and paint stripes) are installed in accordance with McDonnell Douglas MD-80 Service Bulletin 30-59, the physical check may be made by assuring that all installed tufts move freely.

NOTE

This limitation does not relieve the requirement that aircraft surfaces are free of frost, snow, and ice accumulation, as required by Federal Aviation Regulations Sections 91.527 and 121.629. [END OF NOTE]"

(2) Revise the CDL Appendix of the FAA-approved AFM to include the following. This may be accomplished by inserting a copy of this AD in the AFM.

"30-80-01 Triangular Decal and Tuft Assemblies

Up to two (2) decals or tufts per side may be missing, provided:

- a) At least one decal and tuft on each side is located along the aft spar line; and
- b) The tufts are used for performing the physical check to determine that the upper wing is free of ice by observing that the tufts move freely.

Up to eight (8) decals and/or tufts may be missing, provided:

- a) Takeoff may not be initiated unless the flight crew verifies that a physical (hands-on) check is made of the upper wing in the location of the missing decals and/or tufts to assure that there is no ice on the wing when icing conditions exist;

OR

b) When the ambient temperature is more than 50 degrees F."

(3) Install inspection aids (i.e., tufts, decals, mount pads, painted symbols, and paint stripes) on the inboard side of the wings' upper surfaces, in accordance with McDonnell Douglas Service Bulletin 30-59, dated September 18, 1989; Revision 1, dated January 5, 1990; or Revision 2, dated August 15, 1990.

Alternative Methods of Compliance

(i) (1) An alternative method of compliance or adjustment of the compliance time that provides an acceptable level of safety may be used if approved by the Manager, Los Angeles ACO, FAA. Operators shall submit their requests through an appropriate FAA Principal Maintenance Inspector, who may add comments and then send it to the Manager, Los Angeles ACO.

(2) The following alternative methods of compliance (AMOC) were approved previously per AD 92-03-02, amendment 39-8156, and are approved as AMOC's with the indicated paragraphs of this AD:

(i) Installation of a non-skid, striped triangular symbol per Option 5 of McDonnell Douglas Service bulletin MD80-30-059, Revision 4 through Revision 7, is approved as an AMOC with paragraph (b) of this AD.

(ii) Revision of the Configuration Deviation List (CDL) Appendix of the AFM by inserting a copy of CDL Appendix, Section I, Page 2A, dated March 10, 1993, into the AFM, is approved as an AMOC with paragraph (c) of this AD.

Note 8: Information concerning the existence of approved alternative methods of compliance with this AD, if any, may be obtained from the Los Angeles ACO.

Special Flight Permits

(j) Special flight permits may be issued in accordance with sections 21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate the airplane to a location where the requirements of this AD can be accomplished.

Incorporation by Reference

(k) The actions required by paragraphs (c), (d), (e), (f)(1), and (h)(3) of this AD shall be done in accordance with the applicable service document identified in Table 1 of this AD.

Table 1: Referenced Service Documents.

| Service Document | Revision Level | Date |
|--|-----------------------|--------------------|
| McDonnell Douglas Service Bulletin 30-59 | Original | September 18, 1989 |
| McDonnell Douglas Service Bulletin 30-59 | 1 | January 5, 1990 |
| McDonnell Douglas Service Bulletin 30-59 | 2 | August 15, 1990 |
| McDonnell Douglas Alert Service Bulletin MD80-30A087 | Original | September 22, 1997 |
| McDonnell Douglas Service Bulletin MD80-30-090 | Original | October 19, 1999 |
| McDonnell Douglas Service Bulletin MD80-30-078 | 01 | April 8, 1997 |
| McDonnell Douglas Service Bulletin MD80-30-071 | 02 | February 6, 1996 |

(1) The incorporation by reference of McDonnell Douglas Service Bulletin 30-59, dated September 18, 1989; McDonnell Douglas Service Bulletin 30-59, Revision 1, dated January 5, 1990; and McDonnell Douglas Service Bulletin 30-59, Revision 2, dated August 15, 1990; was approved previously by the Director of the Federal Register as of January 17, 1992 (57 FR 2014, January 17, 1992).

(2) The incorporation by reference of the remaining service bulletins listed in Table 1 of this AD, is approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51.

(3) Copies may be obtained from Boeing Commercial Aircraft Group, Long Beach Division, 3855 Lakewood Boulevard, Long Beach, California 90846, Attention: Technical Publications Business Administration, Dept. C1-L51 (2-60). Copies may be inspected at the FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton, Washington; or at the FAA, Los Angeles Aircraft Certification Office, 3960 Paramount Boulevard, Lakewood, California; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

Effective Date

(1) This amendment becomes effective on May 7, 2001.

FOR FURTHER INFORMATION CONTACT: Albert Lam, Aerospace Engineer, Systems and Equipment Branch, ANM-130L, FAA, Los Angeles Aircraft Certification Office, 3960 Paramount Boulevard, Lakewood, California 90712-4137; telephone (562) 627-5346; fax (562) 627-5210.

Issued in Renton, Washington, on March 23, 2001.

Donald L. Riggin, Acting Manager, Transport Airplane Directorate, Aircraft Certification Service.